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| 087769,694 | 12/18/96 | MURRAY | L 2685/4002 |

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| EXAMINER | |
|----------|--------------|
| DOWNS, R | |
| ART UNIT | PAPER NUMBER |
| 2309 | 5 |

DATE MAILED: 10/28/97

Please find below a communication from the EXAMINER in charge of this application.

Commissioner of Patents

First office action

Office Action Summary

Application No.
08/769,694

Applicant(s)

MURRAY ET AL.

Examiner
ROBERT W. DOWNS

Group Art Unit
2309



☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-31 is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-4, 12-16, and 24-31 is/are rejected.

☒ Claim(s) 5-11 and 17-23 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Art Unit: 2309

1. Claims 24-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 24, lines 14-16, the phrase "the rule" (twice) lacks proper antecedent basis.

In claim 27, line 3, the phrase "the rule" lacks proper antecedent basis.

Other dependent rules inherit the problem of the claim for which they depend.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 12-15, 24-26, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Derr et al., U.S. Patent No. 4,891,766 (Derr).

Derr discloses an editor for aiding development of rule based expert systems. In particular, the editor enables a user to modify a rule tree through insertion of rule nodes (see primarily columns 7 and 8). As nodes are added the editor verifies the user's selection in order to prevent creation of invalid logic structures. If the insertion is potentially invalid, the editor offers repairs (see column 8, lines 3-30, and Fig. 4).

Art Unit: 2309

As per claim 1, Derr teaches a method for a user to program a software agent comprising creating a rule (e.g., creating a new rule), placing the rule in a hierarchical order (inserting the rule node into an existing tree structure as a node of type Chain), determining whether the rule is valid within the hierarchical order (checking to see if a selected node in the existing tree already has its maximum allowable number of sub-nodes), suggesting repairs to the rule if the rule is invalid (e.g., suggest "Insert Sibling" or "Insert New Level").

As per claim 2, Derr teaches wherein the rule is created by defining conditions, attributes and actions of the rule (e.g., Figs. II through 1P, where the Evidence nodes constitute conditions, classes of the Evidence nodes are attributes, and the Goal node constitutes the action).

As per claim 3, Derr teaches wherein the hierarchical order is comprised of parent rules, child rules, sibling rules, and inter rules (parent, child, sibling, and new level nodes, respectively - see col. 7, lines 60-68, to col. 8, lines 1 and 2; where the nodes are type Chain).

As per claim 12, Derr teaches an agent manager comprising rule edit module for receiving instructions from a user for creating a rule, and having a rule edit output (the editor and associated process for creating a rule (Figs. II through 1P), rule index module for receiving the rule and placing the rule in hierarchical order, and having a rule index output (the Edit Rule Node function to insert a node of type Chain), rule analysis module for receiving the hierarchical order and using it for determining whether the rule is valid, and having a rule analysis output (Edit Rule Node function preventing creation of invalid logic structures, and specifically checking if a selected node already has its maximum allowable number of sub-nodes), and rule repair module to

Art Unit: 2309

receive the rule if the rule is invalid in order to guide the user in selecting and applying repairs to make the rule valid (the Edit Rule Node function suggesting "Insert Sibling" or "Insert New Level").

As per claim 13, Derr teaches wherein the rule edit module allows the user to enter conditions, attributes, and actions to define the rule (e.g., Figs. II through 1P, where the Evidence nodes constitute conditions, classes of the Evidence nodes are attributes, and the Goal node constitutes the action).

As per claim 14, Derr teaches wherein the hierarchical order is comprised of parent rules, child rules, sibling rules, and inter rules (parent, child, sibling, and new level nodes, respectively).

As per claim 15, Derr teaches wherein the rule index module permits the user to create structured descriptions of sets of objects and individual objects (the Edit Rule Node function for a rule tree of nodes and individual nodes).

As per claim 24, Derr teaches an apparatus for automatically verifying whether a new rule which is to be added to a set of rules is valid with respect to the set of rules comprising a stored subsumption hierarchy of the rules (an existing rule tree consisting of nodes of type Chain connecting other rule trees), means for placing a new rule in the subsumption hierarchy (the Edit Rule Node function inserting a new rule into the existing rule tree), means for using the hierarchy which includes the new rule to determine whether the rule is valid and provide an indication of invalidity when the rule is not valid (the Edit Rule Node function checking if a selected node of the rule tree already has its maximum number of sub-nodes, if less than maximum then inserting

Art Unit: 2309

the new rule node as a child, and if over maximum then inserting the new rule node as a sibling or new level).

As per claim 25, Derr teaches wherein the means for using the subsumption hierarchy further uses the hierarchy to determine a suggested correction for the new rule when the rule is not valid and providing the suggested correction (the Edit Rule Node function, when the selected node is over maximum, suggests inserting the new rule node as a sibling or new level).

As per claim 26, Derr further teaches means responsive to an input from a user indicating acceptance of the suggested correction (as in Fig. 1M, the user is given the opportunity to change the suggested default insertion).

As per claim 31, Derr teaches an interactive rule editing apparatus comprising input means (keyboard), output means (monitor), means for determining whether the rule to be added is valid (check if new rule node can be added as a Child) and if not valid, providing a suggested correction (suggesting as an alternative adding the rule node as Sibling or as a New Level), means for altering the rule (Edit Rule Node; Fig. 3), and wherein the input means receives the rule to be added and provides the rule to be added to the means for determining (new rule node is entered using the keyboard), the output means receives the suggested correction and outputs the suggested correction (the suggested node type for insertion is displayed to the user), the input means receives an indication that the suggested correction has been accepted (the user is given the opportunity to change the default correction), and the means for altering the rule responds to the

Art Unit: 2309

indication by altering the rule to be added in accordance with the suggested correction (edit the new rule node).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derr as in the above and the admitted prior art CLASSIC.

The editor of Derr enforces valid hierarchical rule structures. It is not based on the CLASSIC programming environment. According to the specification, CLASSIC is a description language which permits users to create structured descriptions of sets of objects, or concepts, and individual objects. Users may state hierarchical relationships between concepts. The main service provided by CLASSIC is to determine subsumption relationships automatically by analyzing concept descriptions. Further, CLASSIC determines the intersection between two concepts.

As per claims 4 and 16, Derr teaches an editor for placing new rules into a hierarchical order, but does not teach the use of CLASSIC. Derr teaches enforcement of valid logic structures based primarily on node type constraints (see column 8). The specification admits that it was known to use CLASSIC to state hierarchical relationships between objects and to

Art Unit: 2309

automatically determine subsumption relationships between objects based on their descriptions. It would have been obvious to one of ordinary skill in the art at the time of the invention to use CLASSIC to place the rule into the hierarchical order because CLASSIC is a description language that can determine subsumption relationships based on description of objects and thereby would have extended the structural validity checking capability of the editor of Derr beyond constraints for node types.

6. Claims 5-11 and 17-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Downs whose telephone number is (703) 305-9642.

RWD
October 27, 1997

Robert W. Downs

**ROBERT W. DOWNS
PRIMARY EXAMINER
GROUP 2300**